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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/823,982	04/14/2004	Qing Min Wang	99A209-DIV	5310

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EXAMINER

WONG, EDNA

ART UNIT PAPER NUMBER

1753

DATE MAILED: 01/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/823,982

Applicant(s)

WANG ET AL.

Examiner

Edna Wong

Art Unit

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 39-46, 49 and 54-64 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 39-46, 49 and 54-64 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>April 14, 2004</u> . | 6) <input type="checkbox"/> Other: ____. |

Claim Rejections - 35 USC § 112

I. Claims **39-46, 49 and 54-64** are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for electroplating, does not reasonably provide enablement for electroless plating. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims.

Claim 39, line 1, recites “immersing said interconnects in a copper plating bath”.

The word “immersing” is open to electroless plating. However, Applicants’ specification discloses that the copper plating bath is a copper electroplating bath (page 3, lines 30-31), and that the plating solutions of the invention are used in a conventional manner where the plating current density can range between 3 mA/cm² and 40 mA/cm² (page 9, lines 8-13), and good plating results were obtained using a current density of 3.2 mA/cm² and 25.5 mA/cm² (page 9, lines 15-32). Thus, the method disclosed in Applicants’ specification is an electroplating method, and the claims should comprise an electroplating step.

Therefore, the claims as presently written are not commensurate in scope with the specification.

II. Claims **49, 54-61 and 63-64** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 49

lines 1-2, "poly[(bis(2-chloroethyl)ether-alt-1,2-bis[3(-dimethylamino)propyl]urea, quaternited" lacks antecedent basis.

Is this the same as the -- poly[bis(2-chloroethyl)ether-alt-1,3-bis[3-(dimethylamino)propyl]urea, quaternited -- recited in claim 39, lines 7-8?

Claim 54

line 1, it appears that "a brightener/carrier molecule" is further limiting the copper plating bath recited in claim 39, line 2. However, it is unclear if it is.

If it is, then it is suggested that the words "further comprising" be amended to the words -- wherein said copper plating bath further comprises --.

Claim 56

line 1, it appears that "a carrier/leveler molecule" is further limiting the copper plating bath recited in claim 39, line 2. However, it is unclear if it is.

If it is, then it is suggested that the words "further comprising" be amended to the words -- wherein said copper plating bath further comprises --.

Claim 58

line 1, "said carrier" lacks antecedent basis.

Is this the same as the carrier compound recited in claim 39, line 3?

lines 1-2, "the composition" lacks antecedent basis.

Claim 59

line 1, "said leveler" lacks antecedent basis.

Is this the same as the leveler compound recited in claim 39, line 4?

lines 1-2, "the composition" lacks antecedent basis.

Claim 60

line 1, "said brightener" lacks antecedent basis.

Is this the same as the brightener compound recited in claim 39, line 4?

lines 1-2, "the composition" lacks antecedent basis.

Claim 61

line 1, "said carrier/brightener" lacks antecedent basis.

line 3, "said carrier/leveler" lacks antecedent basis.

Claim 63

line 2, "said solution" lacks antecedent basis.

III. Claims **39-46, 49 and 54-64** are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: the actual plating step.

The body of claim 39 has only one method step, i.e., the “immersing” step.

It does not appear that the interconnects are copper plated by just **solely** “immersing” them in the copper plating bath.

It appears that when the interconnects are immersed in the copper plating bath, they are just sitting in there.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

I. Claims **39-43, 45-46, 54-56 and 58-64** are rejected under 35 U.S.C. 103(a) as being unpatentable over **King et al.** (US Patent No. 5,174,886) in combination with **Nelson** (US Patent No. 2,954,331).

King teaches a method for copper plating of advanced interconnects comprising the step of:

(a) immersing said interconnects (= a printed circuit board containing through-

holes) in a copper plating bath comprising:

(i) an aqueous solution of an acid (= sulfuric acid) and a copper salt (= copper sulfate) and at least one of a carrier compound (= a carrier);

(ii) a water-soluble, mercapto-containing organic brightener compound (col. 3, line 55 to col. 4, line 6); and

(iii) a leveler compound containing single and multiply charged centers (col. 3, line 55 to col. 16) [col. 4, lines 17-36].

The acid is sulfuric acid (col. 4, lines 25).

The copper salt is selected from the group consisting of copper sulfate, copper acetate, copper fluoborate, cupric nitrate and copper pyrophosphate (= copper sulfate) [col. 4, line 24].

The copper salt is copper sulfate (col. 4, line 24).

The carrier compound is selected from the group consisting of a polysaccharide compound, polyethylene glycol and poly(ethylene oxide) [= polyethylene glycol] (col. 3, lines 35-54).

The water-soluble, mercapto-containing organic brightener is selected from the group consisting of *N*-methylallyl-*N'*-methylthiourea; tetramethylthiuram disulfide; ethylethylthiomethyl sulfoxide; ammonium diethyldithiocarbamate; dimethyl-2-thioxo-1,3-dithiole-4,5-dicarboxylate; 3-mercapto-1-propanesulfonic acid sodium salt; 3-mercapto-1-propanesulfonic acid; bis (2-mercaptoethyl) sulfide; ethylene trithio carbonate; ethanethiol; 2-mercaptoethanol; monothioglycerol (1-thioglycerol); 1,2-

ethanedithiol; and thiodiethanol (= 1-sodium-3-mercaptopropane-1-sulfonate) [col. 3, line 55 to col. 4, line 6].

The water-soluble, mercapto-containing organic brightener is selected from the group consisting of ammonium diethyldithiocarbamate, 3-mercaptopropanesulfonic acid sodium salt, and 3-mercaptopropanesulfonic acid (= 1-sodium-3-mercaptopropane-1-sulfonate) [col. 3, line 55 to col. 4, line 6].

The carrier is present in the composition in an amount ranging from about 2 to about 1000 parts per million parts water (= from about 0.15 to about 0.5 g/L = about 150 ppm to about 500 ppm) [col. 3, lines 49-54].

A current between 3 mA/cm² and 40 mA/cm² is applied to said solution (= about 0.4 A/dm² or greater) [col. 4, lines 34-36].

The wave form of said current is selected from the group consisting of direct current, pulse current and pulse reverse current (= a current applied cross the cell = direct current) [col. 4, lines 53-54].

The compounds are added either individually or as combinations to said aqueous solution (col. 4, lines 22-33).

King does not teach wherein said leveler compound is selected from the group consisting of poly(allylamine); poly(allylamine hydrochloride); polyaniline, sulfonated, 5 wt.% in water, 75 mole% sulfonated; poly[bis(2-chloroethyl)ether-alt-1,3-bis[3-(dimethylamino)propyl]urea, quaternized; poly[N,N'-bis(2,2,6,6-tetramethyl-4-piperidiny)]-

1,6-hexaned-diamine-co-2,4-dichloro-6-morpholino-1,3,5-triazine; **polyacrylamide**; poly(acrylamide-co-diallyldimethylammonium chloride); poly(diallyldimethylammonium chloride); poly(melamine-co-formaldehyde), partially methylated; poly(4-vinylpyridine), 25% cross-linked; and poly(1,2-dihydro-2,2,4-trimethylquinoline).

However, Nelson teaches that adding a small quantity of polyacrylamide with a primary brightener to an acid copper plating solution markedly increased the brightness of the plating deposit over the same plating solution containing polyacrylamide or polyacrylamide alone (col. 1, lines 50-63).

Thus, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method of King with wherein said leveler compound is selected from the group consisting of poly(allylamine); poly(allylamine hydrochloride); polyaniline, sulfonated, 5 wt.% in water, 75 mole% sulfonated; poly[bis(2-chloroethyl)ether-alt-1,3-bis[3-(dimethylamino)propyl]urea, quaternized; poly[N,N'-bis(2,2,6,6-tetramethyl-4-piperidiny)-1,6-hexaned-diamine-co-2,4-dichloro-6-morpholino-1,3,5-triazine; **polyacrylamide**; poly(acrylamide-co-diallyldimethylammonium chloride); poly(diallyldimethylammonium chloride); poly(melamine-co-formaldehyde), partially methylated; poly(4-vinylpyridine), 25% cross-linked; and poly(1,2-dihydro-2,2,4-trimethylquinoline) because adding a small quantity of polyacrylamide with a primary brightener to an acid copper plating

solution would have markedly increased the brightness of the plating deposit over the same plating solution containing polyacrylamide or polyacrylamide alone as taught by Nelson (col. 1, lines 50-63).

As to wherein the method further comprises a brightener/carrier molecule, King teaches that a large number of agents have been described in the art for use in electroplating baths ***alone or in combination*** to improve the quality of the electrodeposit in terms of brightness, surface smoothness, hardening, leveling and to increase the lower limiting current density of deposition (col. 1, lines 13-18). Thus, this teaching suggests that molecules are known in the art to be used alone that can improve the quality of the electrodeposit in terms of brightness, surface smoothness, hardening, leveling and to increase the lower limiting current density of deposition, and are well within the skill of the ordinary artisan to have used. Although King discloses a brightener (col. 3, lines 55-56) and a carrier (col. 3, lines 35-36) separately, these components could inherently have had a dual function alone in the copper plating bath, whereas it has been held that a newly discovered use or function of components does not necessarily mean the system is unobvious since this use or function may be inherent in the prior art. *Ex parte Pfeiffer* 135 USPQ 31.

As to wherein the method further comprises a carrier/leveler molecule, King teaches that a large number of agents have been described in the art for use in

electroplating baths ***alone or in combination*** to improve the quality of the electrodeposit in terms of brightness, surface smoothness, hardening, leveling and to increase the lower limiting current density of deposition (col. 1, lines 13-18). Thus, this teaching suggests that molecules are known in the art to be used alone that can improve the quality of the electrodeposit in terms of brightness, surface smoothness, hardening, leveling and to increase the lower limiting current density of deposition, and are well within the skill of the ordinary artisan to have used. Although King discloses a carrier (col. 3, lines 35-36) and a leveler (col. 3, line 57) separately, these components could inherently have had a dual function alone in the copper plating bath, whereas it has been held that a newly discovered use or function of components does not necessarily mean the system is unobvious since this use or function may be inherent in the prior art. *Ex parte Pfeiffer* 135 USPQ 31.

As to wherein the leveler is present in the composition in an amount ranging from about 2 to about 1000 parts per million parts water, the concentration of the leveler is a result-effective variable and one skilled in the art has the skill to calculate the concentration that would determine the success of the desired reaction to occur, i.e., leveling action, absent evidence to the contrary. MPEP § 2141.03 and § 2144.05(b).

King teaches that typical concentration of the leveler range from about 0.05 to about 0.5 mg/L (= about 0.05 ppm to about 0.5 ppm) [col. 4, lines 15-16].

As to wherein the brightener is present in the composition in an amount ranging from about 5 to about 100 parts per million parts water, the concentration of the brightener is a result-effective variable and one skilled in the art has the skill to calculate the concentration that would determine the success of the desired reaction to occur, i.e., brightening action, absent evidence to the contrary. MPEP § 2141.03 and § 2144.05(b).

King teaches that typical concentration of the brightener range from about 0.05 to about 0.4 mg/L (= about 0.05 ppm to about 0.4 ppm) [col. 4, lines 13-15].

As to wherein said carrier/brightener is present in an amount ranging from about 5 to about 1000 parts per million parts water and said carrier/leveler is present in an amount ranging from about 2 to about 1000 parts per million parts water, the concentrations are a result-effective variable and one skilled in the art has the skill to calculate the concentrations that would determine the success of the desired reaction to occur, i.e., surface wetting, brightening and/or leveling action, absent evidence to the contrary. MPEP § 2141.03 and § 2144.05(b).

II. Claims **39-46** and **54-64** are rejected under 35 U.S.C. 103(a) as being unpatentable over **King et al.** (US Patent No. 5,174,886) in combination with **Holtzman et al.** (US Patent No. 4,790,912).

King is as applied for the reasons discussed above and incorporated herein.

King does not teach wherein said leveler compound is selected from the group consisting of poly(allylamine); poly(allylamine hydrochloride); polyaniline, sulfonated, 5 wt.% in water, 75 mole% sulfonated; poly[bis(2-chloroethyl)ether-alt-1,3-bis[3-(dimethylamino)propyl]urea, quaternized; poly[N,N'-bis(2,2,6,6-tetramethyl-4-piperidiny)-1,6-hexaned-diamine-co-2,4-dichloro-6-morpholino-1,3,5-triazine; polyacrylamide; poly(acrylamide-co-diallyldimethylammonium chloride); poly(diallyldimethylammonium chloride); **poly(melamine-co-formaldehyde)**, partially methylated; poly(4-vinylpyridine), 25% cross-linked; and poly(1,2-dihydro-2,2,4-trimethylquinoline).

However, Holtzman teaches that condensation products of formaldehyde with melamine are employed as an adjuvant (promoter) in copper plating baths (col. 25, lines 65-67; and col. 26, lines 53-68).

Thus, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method of King with wherein said leveler compound is selected from the group consisting of poly(allylamine); poly(allylamine hydrochloride); polyaniline, sulfonated, 5 wt.% in water, 75 mole% sulfonated; poly[bis(2-chloroethyl)ether-alt-1,3-bis[3-(dimethylamino)propyl]urea, quaternized; poly[N,N'-bis(2,2,6,6-tetramethyl-4-piperidiny)-1,6-hexaned-diamine-co-2,4-dichloro-6-morpholino-1,3,5-triazine; polyacrylamide; poly(acrylamide-co-diallyldimethylammonium chloride); poly(diallyldimethylammonium

chloride); ***poly(melamine-co-formaldehyde)***, partially methylated; poly(4-vinylpyridine), 25% cross-linked; and poly(1,2-dihydro-2,2,4-trimethylquinoline) because condensation products of formaldehyde with melamine would have promoted the plating reaction in a copper plating bath as taught by Holtzman (col. 25, lines 65-67; and col. 26, lines 53-68).

As to wherein said polysaccharide carrier compound is selected from the group consisting of starch, cellulose, amylopectin and amylose, Holtzman teaches that starches, celluloses and pectin are employed as an adjuvant (promoter) in a copper plating bath (col. 27, lines 9-18). Although Holtzman does not teach them as carrier compounds:

(a) a newly discovered property does not necessarily mean the product is unobvious, since this property may be inherent in the prior art. *In re Best* 195 USPQ 430; *In re Swinehart* 169 USPQ 226; and

(b) the reason or motivation to modify the reference may often suggest what the inventor has done, but for a different purpose or to solve a different problem. It is not necessary that the prior art suggest the combination to achieve the same advantage or result discovered by the Applicants. *In re Linter* 458 F 2d 1013, 173 USPQ 560 (CCPA 1972); *In re Dillon* 919 F 2d 688, 16 USPQ 2d 1897 (Fed. Cir. 1990), cert. denied, 500 USPQ 904 (1991); *In re Linter* 458 F 2d 1013, 173 USPQ 560 (CCPA 1972); *In re Dillon* 919 F 2d 688, 16 USPQ 2d 1897 (Fed. Cir. 1990), cert. denied, 500 USPQ 904 (1991)

and MPEP § 2144.

As to wherein said brightener/carrier molecule is polymeric protein, Holtzman teaches that starches, celluloses and pectin are employed as an adjuvant (promoter) in a copper plating bath (col. 27, lines 9-18). Although Holtzman does not teach them as brightener/carrier molecules:

(a) a newly discovered property does not necessarily mean the product is unobvious, since this property may be inherent in the prior art. *In re Best* 195 USPQ 430; *In re Swinehart* 169 USPQ 226; and

(b) the reason or motivation to modify the reference may often suggest what the inventor has done, but for a different purpose or to solve a different problem. It is not necessary that the prior art suggest the combination to achieve the same advantage or result discovered by the Applicants. *In re Linter* 458 F 2d 1013, 173 USPQ 560 (CCPA 1972); *In re Dillon* 919 F 2d 688, 16 USPQ 2d 1897 (Fed. Cir. 1990), cert. denied, 500 USPQ 904 (1991); *In re Linter* 458 F 2d 1013, 173 USPQ 560 (CCPA 1972); *In re Dillon* 919 F 2d 688, 16 USPQ 2d 1897 (Fed. Cir. 1990), cert. denied, 500 USPQ 904 (1991) and MPEP § 2144.

As to wherein said carrier/leveler molecule is selected from the group consisting of poly[bis(2-chloroethyl)ether-alt-1,3-bis[3-(dimethylamino)propyl] urea, quaternited, and **poly(melamine-co-formaldehyde)**, Holtzman teaches that condensation products

of formaldehyde with melamine are employed as an adjuvant (promoter) in copper plating baths (col. 25, lines 65-67; and col. 26, lines 53-68). Although Holtzman does not teach them as carrier/leveler molecules:

(a) a newly discovered property does not necessarily mean the product is unobvious, since this property may be inherent in the prior art. *In re Best* 195 USPQ 430; *In re Swinehart* 169 USPQ 226;

(b) the reason or motivation to modify the reference may often suggest what the inventor has done, but for a different purpose or to solve a different problem. It is not necessary that the prior art suggest the combination to achieve the same advantage or result discovered by the Applicants. *In re Linter* 458 F 2d 1013, 173 USPQ 560 (CCPA 1972); *In re Dillon* 919 F 2d 688, 16 USPQ 2d 1897 (Fed. Cir. 1990), cert. denied, 500 USPQ 904 (1991); *In re Linter* 458 F 2d 1013, 173 USPQ 560 (CCPA 1972); *In re Dillon* 919 F 2d 688, 16 USPQ 2d 1897 (Fed. Cir. 1990), cert. denied, 500 USPQ 904 (1991) and MPEP § 2144.

III. Claims **39-43, 45-46, 54-56 and 58-64** are rejected under 35 U.S.C. 103(a) as being unpatentable over **King et al.** (US Patent No. 5,174,886) in combination with **Eckles** (US Patent No. 4,384,930).

King is as applied for the reasons as discussed above and incorporated herein.

King does not teach wherein said leveler compound is selected from the group

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consisting of poly(allylamine); poly(allylamine hydrochloride); polyaniline, sulfonated, 5 wt.% in water, 75 mole% sulfonated; poly[bis(2-chloroethyl)ether-alt-1,3-bis[3-(dimethylamino)propyl]urea, quaternized; poly[N,N'-bis(2,2,6,6-tetramethyl-4-piperidiny)-1,6-hexaned-diamine-co-2,4-dichloro-6-morpholino-1,3,5-triazine; polyacrylamide; poly(acrylamide-co-diallyldimethylammonium chloride); poly(diallyldimethylammonium chloride); poly(melamine-co-formaldehyde), partially methylated; **poly(4-vinylpyridine)**, 25% cross-linked; and poly(1,2-dihydro-2,2,4-trimethylquinoline).

However, Eckles teaches that 4-vinylpyridine is employed as a brightener in copper plating baths (col. 6, line 67).

Thus, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method of King with wherein said leveler compound is selected from the group consisting of poly(allylamine); poly(allylamine hydrochloride); polyaniline, sulfonated, 5 wt.% in water, 75 mole% sulfonated; poly[bis(2-chloroethyl)ether-alt-1,3-bis[3-(dimethylamino)propyl]urea, quaternized; poly[N,N'-bis(2,2,6,6-tetramethyl-4-piperidiny)-1,6-hexaned-diamine-co-2,4-dichloro-6-morpholino-1,3,5-triazine; polyacrylamide; poly(acrylamide-co-diallyldimethylammonium chloride); poly(diallyldimethylammonium chloride); poly(melamine-co-formaldehyde), partially methylated; **poly(4-vinylpyridine)**, 25% cross-linked; and poly(1,2-dihydro-2,2,4-trimethylquinoline)

because 4-vinylpyridine would have provided a bright or semi-bright and level deposit as taught by Eckles (col. 6, lines 34-38 and line 67). Thus, 4-vinylpyridine is a leveler. It appears that its polymer, poly(4-vinylpyridine), would have been a leveler too, i.e., functionally equivalent.

Allowable Subject Matter

The following is a statement of reasons for the indication of allowable subject matter:

Claim 49 defines over the prior art of record because the prior art does not teach or suggest the method as claimed in claim 46 wherein said leveler compound is selected from the group consisting of poly[(bis(2-chloroethyl)ether-alt-1,2-bis[3-(dimethylamino)propyl]urea, quaternized, and poly(diallyl dimethylammonium chloride).

The prior art does not contain any language that teaches or suggests the above. Therefore, a person skilled in the art would not have been motivated to adopt the above conditions, and a prima facie case of obviousness cannot be established.

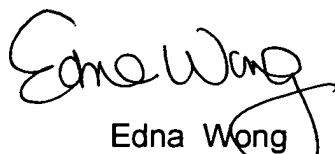
Claim 49 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 1st and 2nd paragraphs, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edna Wong whose telephone number is (571) 272-

1349. The examiner can normally be reached on Mon-Fri 7:30 am to 3:30 pm, Flex Schedule.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Edna Wong
Primary Examiner
Art Unit 1753

EW
January 13, 2005